APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/842,312	04/25/2001	Andrew C. Sturges	S01022/80655 (JHM/EJR)	6679

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EXAMINER
ELLIS, RICHARD L

ART UNIT	PAPER NUMBER
2183	

DATE MAILED: 12/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

--The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address--

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE <u>3 (Three)</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) Months from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on <u>November 18, 2002.</u>

☒ This action is FINAL

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) <u>38-56.</u> is/are pending in the application.

☐ Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) <u>38-49 and 52-57.</u> is/are rejected.

☒ Claim(s) <u>50-51.</u> is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119(a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☒ Notice of References Cited, PTO-892

☐ Notice of Draftsperson's Patent drawing Review, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other _____

Office Action Summary

1.   Claims 38-57 remain for examination.

2.   The text of those sections of Title 35, US Code not included in this action can be found in a prior Office Action.

3.   The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The current title is imprecise.

4.   Applicant must update all cross-references to related applications cited in the specification to include the relevant status, PTO serial numbers, and patent numbers, where appropriate, of the cited cases. At least one such citation occurs on page 20 of the specification.

5.   Applicant is reminded of the proper content of a summary of the invention as set fourth in paragraph (e) below.

Content of Specification

(a)   Title of the Invention. (See 37 CFR § 1.72(a)). The title of the invention should be placed at the top of the first page of the specification. It should be brief but technically accurate and descriptive, preferably from two to seven words.

(b)   Cross-References to Related Applications: See 37 CFR § 1.78 and section 201.11 of the MPEP.

(c)   Statement as to rights to inventions made under Federally sponsored research and development (if any): See section 310 of the MPEP.

(d)   Background of the Invention: The specification should set forth the Background of the Invention in two parts:

    (1)   Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field".

    (2)   Description of the Related Art: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art".

(e)   Summary: A brief summary or general statement of the invention as set forth in 37 CFR § 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the

inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(f)   Brief Description of the Drawing(s): A reference to and brief description of the drawing(s) as set forth in 37 CFR § 1.74.

(g)   Description of the Preferred Embodiment(s): A description of the preferred embodiment(s) of the invention as required in 37 CFR § 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. This item may also be titled "Best Mode for Carrying Out the Invention". Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(h)   Claim(s) (See 37 CFR § 1.75): A claim may be typed with the various elements subdivided in paragraph form. There may be plural indentations to further segregate sub-combinations or related steps.

(i)   Abstract: A brief narrative of the disclosure as a whole in a single paragraph of 250 words or less.

The present summary of the invention includes legal language and phraseology which is appropriate for the claims but which tends to obscure the summary of the invention. This does not provide a proper summary of the invention as called for in 37 CFR 1.73 and in MPEP 608.01(d). The present paragraphs of legal phraseology (page 5 to page 7) should be replaced with paragraphs of *narrative* English text describing the invention. This requirement is upheld from the prior office action because applicant's amendment did not address it in any form.

6.   The nonstatutory double patenting rejection is based is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornam*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a Terminal Disclaimer. A Terminal Disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7.   New claims 38-57 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-27 of U.S. Patent No. 5,961,637. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application claims differ only by omission of elements present in the patented claims. As shown in In re Karlson, 153 USPQ 184 (CCPA 1963), it has been found to be obvious to delete an element and it's function from a claim. This rejection is maintained from the prior office action because applicant's amendment did not address it in any form.

8.   Claims 38-51 rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A)   The following terms lack proper antecedent basis:

1.   "the first instruction" claim 49;

2.   "the subsequent instructions" claim 49;

B)   The scope of meaning of the following terms are unclear:

1.   "said instruction fetch circuitry is operated ... to fetch in parallel the subsequent instruction and the new instruction from said target location." claim 38. As this claim language is worded, it states that the instruction fetch circuitry is fetching two items, 1) the subsequent instruction, and 2) the new instruction, but it also states that both items being fetched are being fetched from the same location, "said target location", wherein "said target location" is defined by the claim language as the location specified by the

branch instruction. So as literally written, the two items fetched are both fetched from the target address specified in the branch instruction. However, as is clear from applicants specification, this is not the intended mode of operation of the system. The fetch circuitry is intended to fetch from the sequential and branch taken paths simultaneously. The claims will be interpreted as if they has been written to claim this intended aspect of applicant's invention. Appropriate correction is required.

9.   New claims 38-42, 44-46, 48-49, and 52-53 are rejected under 35 USC 102(b) as being clearly anticipated by Bruckert et al., U.S. Patent 4,742,451.

Bruckert et al. taught (e.g. see figs. 1-4c) the invention as claimed (as per new claim 38), including a data processing ("DP") system comprising:

A)   storage circuitry for holding a plurality of instructions as respective storage locations (fig. 1, 16);

B)   instruction fetch circuitry for fetching instructions from said storage circuitry (fig. 2a, FETCH UNIT 30), the instruction fetch circuitry including an indicator for providing a indication of a next address at which a next fetch operation is to be effected (fig. 2a, PC 73, col. 7 lines 1-16), and a first and second instruction fetcher for fetching, respectively, a subsequent instruction and a new instruction (col. 2 lines 49-57, col. 7 lines 16-34), and;

C)   execution circuitry (31) for executing fetched instructions comprising a branch instruction indicating a target location from which the subsequent instruction may be fetched (col. 7 lines 34-39), wherein said instruction fetch circuitry is operated responsive to execution of said branch instruction to fetch in parallel the subsequent instruction and the new instruction from said target location (col. 2 lines 49-56).

10.   As to claim 39, Bruckert et al. taught that the fetched instructions further comprised a condition instruction which defined a condition (col. 2 lines 34-49) and determined that further instructions to be executed are new instructions only if that condition is satisfied (col. 2 lines 57-68).

11.   As to claim 40, Bruckert et al. taught that the fetched instructions further comprised an effect branch instruction for implementing the branch (col. 2 lines 34-49).

12.   As to claim 41, Bruckert et al. taught select circuitry responsive to execution of the effect branch instruction to cause said execution circuitry to execute said new instruction if the condition defined by the condition instruction is satisfied wherein said select circuitry is operable to connect a selected one of said first and second instruction fetchers to said execution circuitry (col. 2 lines 57-68).

13.   As to claim 42, Bruckert et al. taught that the instruction fetch circuitry comprised two instruction buffers, a first buffer for holding subsequent instructions connected to said execution circuitry (col. 2 lines 49-51), and a second buffer for holding new instructions (col. 2 lines 52-56) wherein the contents of said second buffer are copied into said first buffer responsive to execution of said effect branch instruction (col. 2 lines 60-68).

14.   As to claim 48, Bruckert et al. taught that the effect branch instruction was located at a branch point after which said new instruction was to be executed (col. 2 lines 9-30).

15.   As to claim 44, Bruckert et al. taught that the target location holds an address from which a first instruction of a string of new instructions is to be fetched (col. 7 lines 34-39, it is noted that this claim is merely reciting the exact definition of a branch instruction offset value).

16.   As to claim 45, Bruckert et al. taught a branch mode where the address of the first instruction of the branch is present in a special register (col. 5 lines 37-42).

17.   As to claim 46, Bruckert et al. taught a branch mode where the target location held and address of a memory location which held the address of the first instruction of the string of new instructions to be fetched (col. 5 lines 56-60).

18.   As to claim 49, Bruckert et al. taught that the plurality of instructions were arranged in a plurality of instructions strings, each string comprising the first instruction and the plurality of subsequent instructions (it is inherent within Bruckert et al.'s system that instructions are arranged in a plurality of strings of instructions, and it is also inherent that any given "string" will have a beginning instruction (the first instruction) and subsequent instructions (the

subsequent instructions).

19. As to claims 52-53, they do not teach or define above the invention claimed in claims 38-42, 44, and 48-49 and are therefore rejected under Bruckert et al. for the same reasons set fourth in the rejection of claims 38-42, 44, and 48-49, supra.

20. Claims 43 is rejected under 35 USC § 103 as being unpatentable over Bruckert et al., U.S. patent 4,742,451.

21. As to claim 43, Bruckert et al. did not teach a third instruction fetch circuitry to implement predicted conditional instructions. However, branch prediction is notoriously well known in the prior art and official notice of such is hereby taken. Additionally, it has also been shown that merely duplicating parts of multiple effects is generally not given patentable weight (*St. Regis Paper Co. v Bemis Co.* 193 USPQ 8 (7th Cir. 1977). It would have been a simple matter of routine engineering for one of ordinary skill in the art to implement a third instruction fetcher within the system of Bruckert et al. for the purposes of handling predicted branch execution because doing so would allow for the system to be able to properly prefetch the required stream of execution before it was needed by the processor, enhancing performance of the system.

22. Claims 47 and 54-57 are rejected under 35 USC § 103 as being unpatentable over Bruckert et al., U.S. patent 4,742,451, in view of Cocke et al., U.S. Patent 3,577,189.

23. As to claim 47, Bruckert et al. did not specifically teach that the system was a pipelined system. However, Cocke et al. taught that it has been well known since at least 1971 to pipeline systems for increased performance (Cocke et al. col. 1 lines 22-40). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have pipelined Bruckert et al.'s system using the well known method of pipelining because of Cocke et al.'s teaching that pipelining is used to increase machine performance (col. 1 lines 22-40).

24. As to claim 54, Bruckert et al. did not teach executing a branch instruction in order to begin prefetching two streams, continuing to execute subsequent instructions until an effect branch instructions, and responding to the effect branch instruction by selecting a single stream

from the two streams being fetched. Cocke et al. taught a computer system which implemented a branch instruction (fig. 5, "BRANCH") which indicated a target location of the branch (col. 3 lines 20-46), continuing to execute subsequent instructions until an effect branch instruction is executed ("EXIT"), and responding to the effect branch instruction by selecting one of the two possible branch paths in order to continue execution (col. 2 lines 5-9, 14-17, and 20-28).

25.   It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have combined Cocke et al.'s system of a branch and effect branch instruction into Bruckert et al.'s system because Cocke et al. taught that his system improves computer performance by preventing stalls resulting from the calculation of all necessary data for a branch (col. 1 lines 28-40 and 45-50, col. 3 lines 7-15). Such a system would enhance Bruckert et al.'s system by allowing calculation of prefetch addresses sooner and therefore giving the dual prefetch units more time to perform their prefetch function.

26.   As to claim 55, Bruckert et al. taught that subsequent instructions were held in a first buffer and new instructions were held in a second buffer, and that effecting the branch comprised copying the contents of the second buffer into the first buffer (col. 2 lines 48-68).

27.   As to claim 56, Bruckert et al. taught that the first instruction fetcher fetched subsequent instructions, the second fetcher fetched new instructions, and effecting the branch selected which of the first and second fetchers supplied instructions for execution (col. 2 lines 45-68).

28.   As to claim 57, Bruckert et al. taught that the branch instruction identifies as the target location the address from which the first instruction of a string of new instructions is to be fetched (col. 7 lines 34-39, it is noted that this claim is simply claiming the exact definition of the offset value present in all branch by offset instructions).

29.   Claims 50 and 51 are objected to as being dependent upon a rejected base claim, but would render the base claim allowable if bodily incorporated into the base claim such that the new base claim included all of the original limitations of the base claim, any intervening

claims, and the objected claim.

30.   Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 CFR § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

31.   Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Richard Ellis whose telephone number is (703) 305-9690. The Examiner can normally be reached on Monday through Thursday from 7am to 5pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Eddie Chan, can be reached on (703) 305-9712. The fax phone numbers for this Group are: After-final: (703) 746-7238; Official: (703) 746-7239; Non-Official/Draft: (703) 746-7240.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Richard Ellis
December 18, 2002

Richard Ellis
Primary Examiner
Art Unit 2183